

## ABSTRACT

There is provided a reaction vessel whereby silicon produced can be smoothly recovered dropwise without excessive thermal load on constitutional parts of the reaction vessel, a silicon deposition feedstock gas can be reacted efficiently even when the reaction vessel is scaled up to industrial large-scale equipment, generation of silicon fine powder and silane oligomers can be suppressed, and industrial silicon production can be performed over extended periods. The tubular reaction vessel comprises a longitudinally-extending wall with a space thereinside, wherein a silicon deposition feedstock gas inflow opening and a deposited silicon discharge opening are provided at an upper portion and a lower end portion respectively, and a flow resistance-increasing region is created on a wall surface of the tubular reaction vessel that is contacted with a feedstock gas. The flow resistance-increasing region is at least one of protrudent, concave and sloped regions.